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EXAMINER

SASAKI, SHOGO

ART UNIT	PAPER NUMBER
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1797

NOTIFICATION DATE	DELIVERY MODE
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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/568,102	Applicant(s) PIIRONEN ET AL.	
	Examiner Shogo Sasaki	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 April 2010.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-35 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 February 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. Amendments to the claims are acknowledged.

Claim Interpretations

2. Regarding claim 18, it is noted that the models; and the properties of liquid are not structures, thus said limitations do not further structurally limit the invention recited in claim 18. Any further references to said elements (e.g., claims 25, 26, 30 and 31) were not given patentable weight. For instance, the examiner respectfully asserts that that the model should be recited as part of the linguistic controller (e.g., to clearly recite that the model or a computer program based on said model are embedded in a controller/processor). It is further noted that the recitation “models which inputs properties...” implies the intended use of the model.

3. Regarding claim 18, “a liquid” is not recited as part of the claimed structure. Any further references (e.g., claim 27) to said element was not given patentable weight. Applicant attempts to define the claimed elements (the linguistic controller and the model) in relationship to how applicant intends for the respective elements to be used or function with said liquid. The structure of the device is not defined or structurally limited by the intended use/function with other unclaimed elements. It should be noted that one is not required to use the claimed device in the same manner as intended by applicant.

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4. Claim 18 does not positively set forth “a liquid treatment system” as part of the claimed subject matter. Any further references (e.g., claim 28) to said element were not given patentable weight even if those references further limit said unclaimed element.

5. Claim 18 does not positively set forth “a chemical” as part of the claimed subject matter. Any further references (e.g., claim 29) to said element were not given patentable weight even if those references further limit said unclaimed element.

6. Claim 18 does not positively set forth “one or more controllers” as part of the claimed subject matter. Any further references (e.g., claims 22, 23 and 24) to said element were not given patentable weight even if those references further limit said unclaimed element.

7. Regarding claims 32-34, recitations directed to the manner in which a claimed apparatus is intended to be used does not distinguish the claimed apparatus from the prior art.

Claim Objections

8. Regarding claims 12 and 29, the term “or” before deformer should be deleted. “When materials recited in a claim are so related as to constitute a proper Markush group, they may be recited in the conventional manner, or alternatively. For example, if “wherein R is a material selected from the group consisting of A, B, C and D” is a proper limitation, then “wherein R is A, B, C or D” shall also be considered proper.” See MPEP 2173.05(h).

Claim Rejections - 35 USC § 112

9. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

10. Claims 1-35 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, it is unclear how the step of controlling (the control objective) is executed. Claim 1 does not claim a step(s) of connecting the modifying and the controlling steps. Thus for instance, one skilled in art cannot draw a proper control diagram to visualize the claimed control scheme. For instance, in the claimed control process, what is considered the input (e.g., manipulated or disturbance); output (e.g., measured or unmeasured) variables; or constraint? One may assume that the dose control may be the manipulated variable in view of the properties of the liquid. However it is unclear if said one or more controller is controlled by the master linguistic controller governed by the adaptation model or by something else. The first 2 steps merely claim a step of changing the control nature of the linguistic controller. The examiner respectfully asserts that a transformation (process transfer functions or etc), depicting how said input/output affects the one or more controller to control the dosing by the master linguistic controller, should be recited. Furthermore, unless the variables and the transformation are clearly defined, it is unclear what can be considered feed-back (claim 5) or feed-forward (claim 6) control loop.

Regarding claim 7, the recitation "one or more cascade controllers" renders said claim unclear, because it is not clear if it is the same one or more controller recited in claim 1 or some other controllers. It is unclear if applicant intends for the one or more controllers in claim 1 are in cascaded configuration; or one uses the output of the primary controller (linguistic controller) to manipulate the set points of the secondary controller (one or more controller) as if it were the final control element (i.e., cascaded control).

Regarding claims 8 and 9, it is unclear how the liquid is described by the quality index. Claims 8 and 9 can only be interpreted that the "property" of the liquid in claim 1 is the quality or the purity.

Regarding claims 13 and 14, it is unclear what is considered incoming or outgoing liquid. The property of liquid per se does not further define the structural nature of the water treatment system recited in the preamble of claim 1 implied by the phrases incoming and outgoing; or does not describe dosing of chemicals into flow of the liquid.

Regarding claims 15 and 16, it is unclear if "said adaptation is performed..." should be "said adaption model is LE/fuzzy model" or other controller in step of controlling comprises the LE/fuzzy model. The term "adaption" implies the outcome, i.e., the end result or the ongoing control of a process control, i.e., the dosing of chemicals into the liquid. It is unclear where in the process the LE-model or the fuzzy model participates.

Regarding claims 17 and 34, it is unclear what is meant by "said adaptation is based on remote operation."

Claim 18 claims a “device arrangement.” The phrase implies: (a) a spatial arrangement/configuration of structural elements of said device; (b) structural cooperative relationships of structural elements of said device; and etc. However, claim 18 only positively claim one structure, i.e., the linguistic controller. It is unclear what defines said device arrangement. It is unclear what is considered the device comprising said linguistic controller. See claim interpretations above. It would be clearer if claim recited a device comprising such and such elements, wherein said elements are structurally related in such and such ways.

Regarding claim 24, it is unclear what is meant by “controller set up.” claim 18 only positively claim one controller (the linguistic controller). It is unclear what other controllers controlled/operated by said linguistic controller define the cascaded control setup (see for instance [0080] of instant disclosure).

Regarding claims 30 and 31, it is unclear what is considered incoming or outgoing liquid. As previously state in the claim interpretation, the liquid is not recited as part of the claimed invention. Thus the property of liquid does not further define the structure of claim 18. Furthermore, claim 18 does not recite any structures that define a liquid flowing into or out of the “device arrangement.”

Regarding claims 32 and 33, it is unclear if “said adaptation” should be “said adaption model.” The term “adaption” implies the outcome, i.e., the end result or the ongoing control of a process control. Therefore the term “adaptation” is considered the intended effect of the device of claim 18.

The term "intelligent" in claim 35 is a relative term which renders the claim indefinite. The term "intelligent" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention.

Regarding claim 35, it is unclear how an analyzer can be labeled "intelligent" without reciting a structure(s) that establishes the meaning of intelligence accepted in the art (See [0081] of instant application.). It is also unclear what this analyzer is capable of performing.

Furthermore, the phrases "software" and "handling routine" implies computer programs. Applicant must recite such elements as embedded in an executable structure. The "analyzer" or "device representing" is not a conventional term to describe a non-transitory tangible media that may comprise a computer program.

Note: Proper and conventional phrases to incorporate an active process limitation with patentable weight into an apparatus claim are for e.g., "a controller configured to/for..." and "a controller programmed to/for..." for performing an active process step(s)/scheme(s).)

Merely phrasing that a structural element (linguistic controller) is modified by other non tangible element to perform applicant's intended purposes of the disclosed processes" in narrative manners does not further structurally limit the claimed apparatus.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

14. Claims 1-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jusso (Proceedings of workshop on applications in chemical and biochemical industry, pp-1-8, 1999. Note: The publication date for this article was provided by applicant.).

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Regarding claims 1-11, 13-15, 18-28, 30-32 and 35, Jusso discloses a device and method of controlling the dosing of chemicals into water (abstract) comprising:

- inputting properties of a liquid into a predefined adaptive model (abstract, lines 8, “quality of incoming water;” and conclusion section);
- modifying a change of control in the control surface of a linguistic equation (LE) controller adaptively, using the predefined adaptation model and the properties of the liquid (abstract, lines 8-9);
- controlling the dosing of one or more chemicals to the liquid by one or more controllers (abstract, lines 8-9);
- wherein linguistic equation associated with said linguistic equation (LE) controller is a dynamic linguistic equation (abstract);
- wherein linguistic equation associated with said linguistic equation (LE) controller is a static linguistic equation (abstract);
- wherein linguistic equation associated with said linguistic equation (LE) controller is nonlinear (page 8 “linguistic equation” line 3: The reference teaches the handling of nonlinearity of the linguistic equations. It would have been obvious to choose a non-linear linguistic equation.)
- wherein at least one of said controllers is a feedback controller (page 7, line 5);
- wherein at least one of said controllers is a feed-forward controller (page 4, line 6: Steady-State model as feed-forward controller);

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- wherein the controller setup comprises one of more cascade controllers (The feedback controller may be considered “master” and the feed-forward controller may be considered “slave,” or vice versa.); and
- further comprises an intelligent analyzer (page 5: The turbidity will have to be measured by an analyzer.).

Juuso does not explicitly teach that the property of liquid as an input to the model is the quality of water or the purity of water.

Jusso’s control system is directed towards a method of controlling the quality of water in water treatment system by adding purification chemicals (abstract).

It would have been obvious to one having ordinary skill in the art at the time of the invention to choose the water quality/purity as one of the variable inputted in the model. Because “the water purification chemicals” recited in the abstract implies that the purpose of the treatment is to purify water. Jusso teaches that “When the quality or amount of incoming water changes crucially, a new operating point can be defined by the static model. The dynamic model for its part predicts a reasonable dosing rate for the chemicals in the current working point.” The examiner asserts that choosing purity/quality/property of water as the control variable is obvious. The examiner further asserts that the purification control based on incoming water (dirtiness of the water treated) and outgoing water (acceptable purity of water disposed in the environment) is also obvious in view of Juuso's disclosure.

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Regarding claims 16 and 33, Juuso discloses all of the limitations as set forth above. Juuso further teach that the adaptive LE controller can be tuned with neural network. Juuso does not explicitly teach that the neural network can be of fuzzy logic/model.

It would have been obvious to one having ordinary skill in the art at the time of the invention to choose a specific neural network, fuzzy model, out of finite number of options. The claim would have been obvious because “a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense.”

Regarding claims 17 and 34, Juuso discloses all of the limitations as set forth above.

Juuso does not explicitly teach that the control may be performed from the remote location.

It would have been obvious to one having ordinary skill in the art at the time of the invention to implement the control process disclosed by Juuso from a remote location, for the purpose of eliminating the necessity of presence of personnel at the treatment site.

Regarding claims 12 and 29, Juuso discloses all of the limitations as set forth above.

Juuso does not explicitly teach that the chemical added to the water can be of specific types of chemicals recited in claims 12 and 29.

It would have been obvious to one having ordinary skill in the art at the time of the invention to choose a specific treatment chemical, out of finite number of options. The claim would have been obvious because "a person of ordinary skill has good reason to pursue the known options within his or her technical grasp. If this leads to the anticipated success, it is likely the product not of innovation but of ordinary skill and common sense."

Response to Arguments

15. Applicant's arguments filed 4/12/2010 have been fully considered.
16. The 112(1) and 112(2) rejections of claims 1-17; and 112(2) rejections of claims 19-21, 24 and 35 from the previous action are withdrawn.
17. Applicant's arguments with respect to the prior art rejection have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

19. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shogo Sasaki whose telephone number is (571)270-7071. The examiner can normally be reached on Mon-Thur, 10:00am-6:30pm, EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SS

/Jill Warden/
Supervisory Patent Examiner, Art Unit 1797

7/2/10